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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/787,292

02/26/2004

John J. Vajo

GP-303955

4952

7590

03/19/2008

Kathryn A. Marra
Mail Code 482-C23-B21
300 Renaissance Center
P. O. Box 300
Detroit, MI 48265-3000

EXAMINER

LANGEL, WAYNE A

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

03/19/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/787,292	Applicant(s) VAJO ET AL.	
	Examiner Wayne Langel	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☒ Claim(s) 119, 120, 139-146, 149, 150, 155-160 and 180 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3-7-08</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 1-4,7-12,14,15,24,25,27-38,41,42,47-52,70-86,88-90,92-97,100-113,117-120,122-124,131-146,149,150,155-160 and 178-189.

Continuation of Disposition of Claims: Claims rejected are 1-4,7-12,14,15,24,25,27-38,41,42,47-52,70-86,88-90,92-97,100-113,117,118,122-124,131-138,178,179 and 181-189.

Claims 1-4, 7-9, 12, 14, 15, 24, 25, 27-30, 70, 73-84, 88-90, 92-97, 102-113, 117, 118, 122-124, 131-138, 178, 179, and 181-189 stand rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chen et al '936. No distinction is seen between the process and composition disclosed by Chen et al '936, and that recited in claims 1-4, 7-9, 12, 14, 15, 24, 25, 27-30, 70, 73-84, 88-90, 92-97, 102-113, 117, 118, 122-124, 131-138, 178, 179, and 181-189. Chen et al '936 discloses a solid state reaction between a carbon material and at least one alkali metal salt selected from the group consisting of nitrates, hydroxides, carbonates, halogenides, acetates, hydrides and nitrites. (See col.5, lines 24-56 and col. 10, lines 1-14.) Accordingly Chen et al '936 contemplates the combination of alkali metal hydroxides and hydrides during the reaction. Such alkali metal hydroxide and hydride would inherently react to form the corresponding alkali metal oxide and hydrogen. In any event, it would be prima facie obvious to select alkali metal hydroxides and alkali metal hydrides as the alkali metal salts for the reaction of Chen et al '936, since Chen et al '936 suggest that any two of the named salts may be used in combination.

Applicants' argument, that Chen et al '936 lacks any description or suggestion to react a hydride composition with a hydroxide composition to form hydrogen, is not convincing, since appellants have not explained why the reaction between the alkali metal hydride and alkali metal hydroxide in the process of Chen et al '936 would not inherently form hydrogen. Applicants' original claim 81 provides evidence that the carbon present in the reaction mixture of Chen et al '936 would catalyze the reaction between the alkali metal hydride and alkali metal hydroxide to form hydrogen. Applicants' argument, that there is

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no suggestion in Chen et al '936 that mixtures or combinations of the alkali metal salts could, or more importantly, should be selected and used in an independent reaction, is not convincing. Chen et al '936 suggest at col. 5, lines 1-7 and col. 8, lines 58-61, for example, that mixtures of the alkali metal salts may be reacted. There is no requirement that Chen et al '936 suggest that mixtures should be reacted, since it is only necessary that the prior art fairly suggests doing what applicants' have done, i.e., reacted an alkali metal hydride with an alkali metal hydroxide. Applicants' argument, that there is no disclosure or suggestion in Chen et al '936 of producing hydrogen in the calcinations process where hydrogen is intentionally present as a reducing atmosphere, is not convincing, since Chen et al '936 discloses at col. 5, lines 50-56 that the calcinations may be carried out in an inert atmosphere. Applicants' argument, that claim 111 requires a hydrogenated state and a dehydrogenated state, is not convincing, since the composition of Chen et al '936 would be in the dehydrogenated state after the calcinations. It is noted that claims 111 and 187 and the claims dependent thereon recite a composition comprising a hydride and a hydroxide, which is clearly disclosed or at least suggested at col. 8, lines 58-61 of Chen et al '936. These composition claims do not require the production of hydrogen. Applicants' argument, that the claims provide for specific combinations of hydride and hydroxide reactants in the specific reaction mechanisms, is not convincing, since Chen et al '936 specifically discloses at col. 8, lines 34-36 that the alkali metal may be sodium, lithium or a combination thereof. Applicants' argument, that the prior art does not teach or suggest hydrogen storage systems that have hydroxides substantially free of water to provide a hydrogen

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generation reaction that is highly controllable and has a relatively low change in enthalpy, is not convincing, since the hydroxides disclosed by Chen et al '936 would presumably be in the dehydrated state, since there is no indication in the reference that the hydroxides are hydrated. In any event, one of ordinary skill in the art would expect that dehydrated hydroxides would function in the process of Chen et al '936. Applicants' argument, that claims 107 and 108 require removing products, namely oxide and/or hydrogen products formed during the reaction, is not convincing, since one of ordinary skill in the art would be motivated to remove any reaction products formed to shift the equilibrium toward the production of more of the alkali metal-doped carbon-based material. Applicants' argument, that in claims 109 and 110 the reaction is conducted in the presence of a catalyst, is not convincing, since the carbon present during the reaction of Chen et al '936 would catalyze the reaction to no less extent than would the carbon recited in claims 81, 110 and 186, for example.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4, 7-12, 14, 15, 24, 25, 27-38, 41, 42, 47-52, 70-86, 88-90, 92-97 and 100-110 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, lines 5 and 6, there is no antecedent basis for "said one or more cationic species..." Claim 14 is indefinite in depending from a cancelled claim. Claim 12 is indefinite in that it is broader than claim 1.

Claims 119, 120, 139-146, 149, 150, 155-160 and 180 are objected to as based on rejected parent claims, and would be allowed if written in independent form.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wayne Langel whose telephone number is 571-272-1353. The examiner can normally be reached on Monday through Friday, 8 am - 3:30 pm Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wayne Langel/
Primary Examiner, Art Unit 1793

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